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RESEARCH

Assessing the magnitude and lifestyle determinants of food addiction in young adults

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Abstract

Purpose Food addiction involves excessive consumption of highly processed foods rich in salt, sugar, and fats driven by hedonic eating behaviors. Increased food addiction, especially among young adults, could potentially lead to eating disorders. Hence, the current study aimed to assess the magnitude and lifestyle determinants of food addiction in young adults from Mumbai, India

Methods Healthy young adults ($n = 354$) aged 18–25 years were recruited using convenience sampling. Utilizing web-based platforms, the Yale Food Addiction Scale 2.0 was administered. Statistical analysis was performed with significance at a p value of ≤ 0.05.

Results The mean age of participants was (20.99 ± 1.94) years, and the magnitude of food addiction was 11.3%. Sociodemographic determinants such as age ($p = 0.000$), socio-economic status ($p = 0.000$), and education ($p = 0.000$), and lifestyle determinants such as BMI ($p = 0.012$), dietary habits ($p = 0.000$), sleep ($p = 0.001$), physical activity ($p = 0.001$), anxiety ($p = 0.001$), and depression ($p = 0.000$) were significantly associated with food addiction. However, after adjusting for sociodemographic factors, the relationship between lifestyle factors and food addiction became evident. The frequent consumption of specific unhealthy foods increased the risk (OR ≥ 1.0, p value ≤ 0.05), while the consumption of healthy foods reduced the risk (OR<1.0, p value ≤ 0.05) of food addiction.

Conclusion The present study revealed a rising magnitude of food addiction and its determinants among Indian youth, highlighting the urgency of sensitization and designing targeted nutrition interventions to combat food-related addiction and hence reducing the risk of eating disorders.

Level of Evidence: Level V, Descriptive Study.

Keywords Food addiction · Eating disorders · Obesity · Ultra-processed foods · Lifestyle determinants · Diet

Introduction

The term "food" is defined as addictive-like food behaviors characterized by dysregulated and excess consumption of energy-dense foods [1]. Unlike established criteria for other eating disorders, the diagnostic criteria for food addiction as a clinical disorder remain contentious [2]. Several studies in the past have explored the mechanisms underlying food addiction with two prominently supported concepts. First, past studies have focused on understanding the addictive-like properties of food, wherein the chemical composition of food and its interaction with cells, molecules, and reward systems were identified as neurobiological mechanisms of food addiction [3–7]. For example, processed and ultra-processed foods with high fat, sugar, and salt have been recognized to trigger the dopamine reward system, leading to

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excessive intake [8]. Second, food addiction has also been viewed as dysregulated 'eating behaviors' rather than food-derived conditions [9, 10]. However, it has been a challenge for the scientific community to date to distinguish food addiction from other maladaptive eating behaviors such as binge-eating disorder (BED) and bulimia nervosa (BN) [11]. Globally, the prevalence of food addiction has increased. Studies conducted among Brazil [12], Lebanon [13], Germany [14], Australia [15], Denmark [16], and the United States [17] report the prevalence of food addiction between 11.4 and 19.1%. Recently, with the rampant nutrition transition towards Westernized dietary patterns, the magnitude of food addiction has increased among low- and middle-income countries [18, 19]. Meanwhile, in India, a study [20] among young adults reported a prevalence of 13.3%, and another study [21] reported a higher prevalence of 32.5%. These findings underscore the scope and urgency of assessing the prevalence of food addiction among Indian youth.

Food addiction refers to hedonic eating behaviors that involve consuming highly processed foods rich in salts, sugars, and fats excessively, exceeding energy requirements [22]. Several studies [23, 24] have highlighted the association between highly processed foods and addictive behaviors such as decreased control over intake, strong urges or cravings, prolonged use despite adverse consequences, and failed attempts to reduce or quit. Although food addiction has not been classified as a clinical condition, it has the potential to predispose an individual to eating disorders, especially bulimia nervosa (BN) [25] and binge-eating disorders (BED) [26]. Further, a strong bidirectional relationship between food addiction and obesity exists, posing a unique challenge for our current health ecosystems. Although diet has been a key determinant, a variety of lifestyle factors, including a lack of physical activity, poor sleep, anxiety, depression, lack of cooking skills, night eating syndrome, and emotional eating, can also influence the dynamics of food addiction among young adults [27–29]. However, their interrelationship has been less explored, especially among Indian youth. In addition, sociodemographic determinants, including age, gender, socio-economic status, and education, have been associated with food addiction [30, 31]. Although food addiction can be seen across different age groups, its significance among young adults is important, considering the negative implications on their future health. Therefore, the present study focuses on assessing the magnitude of food addiction among Indian youth.

Food addiction has been assessed using questionnaire-based scales and instruments such as the Yale Food Addiction Scale (YFAS). The latest version of the YFAS 2.0 has been used extensively among Western populations such as German [14], Australian [15], Danish [16], American [17], and Italian [32], whereas least explored in non-Western parts of the world with few studies among Japanese [33], Chinese [34], Korean [35] and Arabic [36] populations. However, to our knowledge, no study has been conducted using the updated YFAS 2.0 in India. Hence, we aimed to identify the magnitude of food addiction and its lifestyle determinants among young adults from Mumbai, Maharashtra, India.

Methods

Study design and participants

This descriptive, cross-sectional study enrolled young adults aged 18–25 years from Mumbai, India, between June and August 2023. The data collection period began from June to August 2023, and participants were shared a link to an online questionnaire by approaching them via emails and messages through social networking platforms. Considering the huge population of Mumbai, a volunteer sampling method was most appropriate to reach the study participants [37]. Participants who could access online questionnaires were included, whereas participants with a known condition, namely an eating disorder, severe mental illness, or a chronic condition such as cancer or diabetes, were excluded. The data quality and participant authenticity were maintained by conducting an online meeting with participants by the researcher. Further, responses were restricted to single participation. A questionnaire consisted of a total of 89 questions divided into four sections such as (a) sociodemographic, lifestyle determinants, and anthropometric data (14 questions); (b) Yale Food Addiction Scale Version 2.0 (35 questions); (c) food frequency questionnaire (24 questions); (d) patient health questionnaire and general anxiety disorder (16 questions). The self-reported data on sociodemographic data such as height, weight, BMI, age, socio-economic status, education, gender, food habits, diet regimen, hours of sleep, and physical activity were collected. BMI was classified as per World Health Organization (WHO) definitions in this study as follows: <18.5 kg/m^2-underweight, 18.5–25 kg/m^2, overweight/obesity- ≥ 25 kg/m^2. [add citation]. Physical activity levels were assessed as per the WHO definitions, with sedentary, moderate, and high levels as the criterion [add citation]. Sleep duration was simply categorized by researchers into <4 h, 4–8 h, and >8 h, considering the standard recommendations of National Sleep Foundation [add citation]

Using Cochran's method, $n = Z2\ p\ x\ (1\text{-}p)/d2$, a sample size of 367 was determined (5% degree of precision, 32% population magnitude, 95% level of confidence, and 10% attrition rate) [21]. Incomplete 13 forms were excluded, resulting in a final sample size of 354.

Ethical approval and informed consent

The Independent Ethics Committee (IEC) of Symbiosis International University (SIU/IEC/533) approved the study, and electronic informed consent was obtained from participants to ensure voluntary participation. The study adhered to the principles of the Declaration of Helsinki and the STROBE guidelines [38].

Measures

Yale Food Addiction Scale version 2.0 (YFAS 2.0)

The upgraded version of the Yale Food Addiction Scale 2.0 with 35 items was considered [39]. The upgraded version consisted of 10 additional items as compared to the previous 25-item scale [39]. We developed the Marathi translation of the Yale Food Addiction Scale Version 2.0 (YFAS 2.0) questionnaire using a back-translation method. This translation was aimed at a semantic translation rather than a word-for-word translation. The Cronbach alpha (0.971) indicated good reliability for all 35 items. Consensus from two bilingual language experts was obtained for the statements and the conceptual validity for the items and the scale was obtained. This questionnaire is a well-known assessment tool for identifying food addiction symptoms over a period of the past 12 months. It consists of an 8-point Likert scale that varies from "never" (= 0) to "everyday" an 8-point Likert scale that varies from "never" (= 0) to "every day" (= 7), which identifies the severity of food addiction. 33 items indicate the 11 symptom criteria, whereas 2 items indicate 1 clinical impairment criterion. To ascertain diagnostic thresholds, a threshold was established for each item, enabling the determination of participants' severity levels. Participants may be categorized into no symptoms (1 or fewer symptoms or not meeting clinical impairment criteria), mild symptoms (2 or 3 symptoms and clinical impairment), moderate symptoms (4 or 5 symptoms and clinical impairment), or severe symptoms (6 or more symptoms and clinical impairment FA). This refined approach enhances the precision of diagnostic categorization and aligns with standardized severity levels [40].

Patient health questionnaire and general anxiety disorder (PHQ-9 and GAD-7)

The PHQ-9 and GAD-7 questionnaires comprising 9 and 7 items, respectively, were used to assess depression and anxiety. The participants indicated the severity of symptoms over the past 2 weeks using a 4-point Likert scale (0 =). A score of less than 5 indicated mild anxiety and a score between 5 and 10 indicated moderate to severe anxiety. Final scores categorized participants as 'Yes' for diagnosed and 'No' for non-diagnosed cases.

For each statement present in the (PHQ-9 and GAD-7), 4-point Likert scale was used, 'not difficult at all' (= 0) to 'extremely difficult' (= 4). A score of < 5 was considered to be mild anxiety, whereas a score between 5 and 20 was categorized as moderate to severe anxiety [41]. The final scores obtained from both questionnaires were classified as 'Yes' for diagnosed cases and 'No' for non-diagnosed cases.

Food frequency questionnaire

A 24-item validated food frequency questionnaire (FFQ) by Schulte et al., [17] was modified to assess the frequency of consumption of healthy and unhealthy foods and to examine its association with food addiction. The modified FFQ had good reliability (0.879) and was assessed using Cronbach alpha. Considering the general food consumption patterns and availability of foods in Mumbai, India, a final 22-item FFQ was employed, which consisted of 12 'healthy items' and 10 'unhealthy items.' The consumption frequencies over the last month was recorded as "never" (0), "once a month" (2), "once a week" (3), "twice a week" (4), "once a day" (5), and "twice daily" (6) on a 6-point Likert Scale. The final questionnaire was pilot-tested on 5% of the total sample size, and these data were excluded from the final analysis.

Assessment of compliance

In addition, a general questionnaire was used to assess self-reported demographic and lifestyle determinants. This was enabled through a face-to-face interaction for 10–15 min via Google Meet videoconferencing conducted by the researchers. This approach aimed to enhance understanding and data quality.

Statistical analysis

Online data were extracted to Google Sheets to check entries and duplicates. Statistical analysis was conducted using Statistical Package for Social Sciences (SPSS) Software (Version 24.0) Normality was checked using the Shapiro–Wilk test, and parametric tests were performed. Descriptive statistics such as mean and standard deviation were used to calculate the YFAS 2.0 item scores, and the magnitude of food addiction was expressed as frequency and percentages. Multinomial logistic regression with food addiction as a dependent variable was performed to identify the lifestyle and dietary determinants. Sociodemographic variables such as age, gender, socio-economic status, and occupation were adjusted for the analysis. In addition, Chi-square goodness of fit and R-square value of the model were calculated. Beta

coefficient with a 95% confidence interval (CI) and p values assessed association and strength with significance at $p \leq 0.05$ for all tests.

Results

The mean age of 354 participants was 20.99 ± 1.94 years, majority 237 (66.9%) were females. The mean height and weight were 164.5 ± 10.6 cm and 61.5 ± 13.09 kg. Most participants, 149 (42.1%), had a normal BMI category (18.5–22.9 kg/m^2), and 146 (41.2%) were overweight/obese category (>23 kg/m^2). Over half, 200 (56.5%), were undergraduates, and the majority, 259 (73.2%), belonged to a medium socio-economic status.

The magnitude of FA was 11.3% (n = 40) with varying severity levels: mild 19 (5.4%), moderate 16 (4.5%), and severe 5 (1.4%) levels (Supplementary Table 1). When investigating the responses to 35 YFAS 2.0 FA items, the results indicated that 3 of the 35 items had the highest mean scores (3.37 ± 1.99), whereas 5 of 35 items acquired the lowest mean scores (2.59 ± 1.72). The 3 items with higher mean scores (3.37 ± 1.99) included were item #15, "When I cut down or stopped eating, I had strong cravings for them." Item #29, "Strong urges to eat certain foods that I couldn't think of anything," and item #30, "Intense cravings for certain food that felt like I had to eat them right away." The five least acquired items of 35 items by Indian youth were observed to be item #1, "When I started to eat certain foods, I ate much more than planned." Item #2: "I continued to eat certain foods even though I was no longer hungry," Item #3: "I ate to the point where I felt physically ill," item #5: "I spent a lot of time feeling sluggish or tired from overeating" and item #6 "I spent a lot of time eating certain foods throughout the day" with mean scores 2.59 ± 1.72 (refer Supplementary Table 2 for more details). Across 12 YFAS 2.0 domains, the majority of the participants, 154 (43.5%), met the criterion of FA for the 9th domain on failure in fulfilling major roles influenced by FA. This was followed by the 7th domain on withdrawal symptoms, the 10th domain for the use of food in a physically hazardous situation, and the 11th domain for craving/strong desire to consume food (Table 1).

Significant associations with FA were found for sociodemographic determinants, young age (18–21 years) (B = 0.35; 1.53–2.09; p = 0.000), student phase occupation (B = 0.12; 0.03–0.52; p = 0.000), and medium socio-economic status (B = 1.35; 0.37–4.96; p = 0.000). Among the lifestyle determinants of FA, higher BMI (B = 0.80; 0.32–2.00; p = 0.012), non-vegetarian dietary preference (B = 2.54; 2.54–2.54; p = 0.000), 4–8 h sleep duration (B = 0.57; 0.13–2.59; p = 0.001) and >8 h (B = 0.72; 0.16–3.35; p = 0.006), moderate (B = 1.99; 0.26–3.22; p = 0.001) and higher physical activity (B = 1.60; 0.15–2.07; p = 0.011), anxiety (B = 3.21;1.64–6.30; p = 0.001) and depression (B = 4.87; 4.87–4.87; p = 0.000). Adjusting for sociodemographic determinants such as age, gender, socio-economic status, and occupation provided a nuanced understanding of the relationship between lifestyle determinants and food addiction (Table 2).

The frequent consumption of various foods high in fats, sugars, and oils increases the risk of food addiction. The highest risk was observed for daily consumption of cheese (OR = 4.21; 95% CI = 1.29–13.69) followed by fried

Table 1 Domains of YFAS 2.0 (n = 354)

YFAS 2.0 symptoms	Number of participants who met the criteria	No FA n (%) †	FA n (%) ††
Substance taken in larger amount and for longer period than intended	51 (14.4%)	39 (12.4%)	12 (30%)
Persistent desire or repeated unsuccessful attempts to quit	31 (8.7%)	17 (5.4%)	14 (35%)
Much time/activity to obtain, use, recover	20 (5.6%)	12 (3.8%)	8 (20%)
Giving up or reducing significant social, occupational, or recreational activities	84 (23.7%)	80 (25.4%)	4 (10%)
Use continues despite knowledge of adverse consequences	83 (23.4%)	61 (19.4%)	22 (55%)
Tolerance	32 (9%)	18 (5.7%)	14 (35%)
Characteristic withdrawal symptoms; substance taken to relieve withdrawal	124 (35%)	96 (30.5%)	28 (7%)
Continued use despite social or interpersonal problems	91 (25.7%)	89 (28.3%)	2 (5%)
Failure to fulfill major role obligation	154 (43.5%)	147 (46.8%)	7 (17.5%)
Use in physically hazardous situations	123 (34.7%)	109 (34.7%)	14 (35%)
Craving, or a strong desire or urge to use	116 (32.7%)	92 (29.2%)	24 (60%)
Use causes clinically significant impairment or distress	54 (15.2%)	14 (4.4%)	40 (100%)

FA food addiction

† indicates the participants who met the criteria for symptoms but were not diagnosed cases of food addiction. However, they are at risk of developing food addiction †† indicates the participants who met the criteria for symptoms and were diagnosed with cases of food addiction using YFAS 2.0

Table 2 Association between sociodemographic and lifestyle and anthropometric determinants of food addiction

Variables		FA n (%)	Odds ratio	95% confidence interval		Unadjusted p value	Adjusted p value°
				Lower	Upper		
Sociodemographic determinants							
Age	18–21 years	34 (85%)	0.35	1.53	2.09	0.000*	
	21–23 years	3 (7.5%)	1.20	0.23	6.18	1.000	
	24–25 years†	3 (7.5%)	–	–	–	–	
Socio-economic status	Medium	34 (85%)	1.35	0.37	4.96	0.000*	
	High	3 (7.5%)	7.18	2.26	2.64	1.000	
	Low†	3 (7.5%)	–	–	–	–	
Occupation	Undergraduate student	31 (77.5%)	0.12	0.03	0.52	0.000*	
	Postgraduate student	7 (17.5%)	0.18	0.36	0.90	0.04*	
	Employed†	2 (5%)	–	–	–	–	
Gender	Female	23 (57.5%)	1.60	0.82	3.14	0.345	
	Male†	17 (42.5%)	–	–	–	–	
Lifestyle and anthropometric determinants							
BMI	Normal	12 (30%)	0.94	1.84	2.39	0.257	0.800
	Overweight/obese	21 (52.5%)	0.80	0.32	2.00	0.012*	0.085
	Underweight†	7 (17.5%)	–	–	–	–	
Dietary preference	Non-veg	40 (100%)	2.54	2.54	2.54	0.000*	
	Veg†	0 (0%)	–	–	–	–	
Hours of sleep	4–8 h	22 (55%)	0.57	0.13	2.59	0.001*	0.685
	More than 8 h	16 (40%)	0.72	0.16	3.35	0.006*	0.389
	Less than 4 h†	2 (5%)	–	–	–	–	
Physical activity	Moderate	22 (55%)	1.99	0.26	3.22	0.001*	0.464
	High	15 (32.5%)	1.60	0.15	2.07	0.011*	0.208
	Sedentary†	3 (7.5%)	–	–	–	–	
Anxiety	Yes	23 (57.5%)	3.21	1.64	6.30	0.001*	0.000
	No†	17 (42.5%)	–	–	–	–	0.000
Depression	Yes	40 (100%)	4.87	4.87	4.90	0.000*	–
	No†	0 (0%)	–	–	–	–	

FA food addiction

† indicates reference category; *p value at ≤ 0.05 was considered significant, ° indicates p value adjusted for age, gender, socio-economic status and occupation

chicken (OR = 3.92; 95% CI = 1.22–12.56), cookies (OR = 3.38; 95% CI = 0.91–12.55), cake (OR = 3.45; 95% CI = 1.17–10.21), burgers (OR = 3.28; 95% CI = 1.12–9.60), pizza (OR = 1.16; 95% CI = 0.32–4.13) and French fries (OR = 2.47; 95% CI = 0.48–12.69). Weekly consumption of chocolate (OR = 1.57; 95% CI = 0.52–4.74) and carbonated beverages (OR = 1.23; 95% CI = 0.50–3.03) also increased the risk among participants. On the contrary, daily consumption of healthy foods such as beans (OR = 0.59; 95% CI = 0.21–1.67), broccoli (OR = 0.32; 95% CI = 0.04–2.60), corn (OR = 0.41; 95% CI = 0.09–1.87), carrots (OR = 0.15; 95% CI = 0.02–1.13), apples (OR = 0.55; 95% CI = 0.19–1.56), and strawberries (OR = 0.36; 95% CI = 0.08–1.67) did not show any risk towards food addiction. Infrequent consumption of healthy foods weekly, such as eggs (OR = 1.05; 95% CI = 0.36–3.06), nuts (OR = 1.44; 95% CI = 0.50–4.17), cucumber (OR = 1.03; 95% CI = 0.22–4.81), and banana (OR = 1.58; 95% CI = 0.55–4.14) posed a risk for food addiction as well (Table 3).

Discussion

Young adults, in particular, are susceptible to food addiction as a consequence of various factors which could further lead to the development of eating disorders. The magnitude of food addiction among Indian young adults has been less explored by past researchers in India, with only two studies reporting the magnitude to be 13.3% [20] and 32.5% [20], using the older version of YFAS. Therefore,

Table 3 Dietary determinants of food addiction

Variables	χ^2 (goodness of fit)	R-square	Odds ratio	95% confidence interval for odds ratio	
				Lower	Upper
Unhealthy foods					
Cake‡	20.83	0.057	**3.45**	1.17	10.21
Cheese‡	0.04	0.043	**4.21**	1.29	13.69
Cookies‡	26.70	0.073	**3.38**	0.91	12.55
Chips‡	17.07	0.047	**2.09**	0.65	6.79
Burgers‡	34.21	0.092	**3.28**	1.12	9.60
Fried chicken‡	23.55	0.064	**3.92**	1.22	12.56
French fries‡	20.88	0.057	**2.47**	0.48	12.69
Pizza‡	25.85	0.070	**1.16**	0.32	4.13
Breakfast cereals†	20.77	0.057	0.54	0.20	1.42
Carbonated beverages†	22.73	0.062	**1.23**	0.50	3.03
Chocolate†	7.74	0.022	**1.57**	0.52	4.74
Ice cream†	23.39	0.064	0.88	0.36	2.15
Healthy foods					
Apples‡	2.26	0.006	0.55	0.19	1.56
Beans‡	16.76	0.046	0.59	0.21	1.67
Broccoli‡	4.86	0.014	0.32	0.04	2.60
Corn‡	7.21	0.020	0.41	0.09	1.87
Carrots‡	9.97	0.028	0.15	0.02	1.13
Strawberries‡	6.07	0.017	0.36	0.08	1.67
Bananas†	2.10	0.006	**1.58**	0.55	4.14
Cucumbers†	9.94	0.028	**1.03**	0.22	4.81
Eggs†	4.22	0.012	**1.05**	0.36	3.06
Nuts†	10.85	0.030	**1.44**	0.50	4.17

‡ Daily consumption, † Weekly consumption; bold values indicate higher odds ratios

the current study aimed to identify the magnitude of food addiction among young adults in Mumbai, India, using the latest YFAS 2.0, a previously unexplored tool in an Indian context. The magnitude of food addiction (FA) was reported to be 11.3%, similar to the rates reported in the US (15.2%) [17] and Germany (7.9%) [14], respectively.

Food addiction was significantly associated with specific sociodemographic determinants such as age, student phase, and socio-economic status, but not with gender. Young age, particularly the student phase was associated with FA, consistent with findings from Western counterparts [14–17]. Graduating young adults were susceptible to FA due to increased cravings for certain foods [22, 42], emotional dysregulation, and negative urgency [13, 43, 44]. Food addiction was associated with medium socio-economic status, contrary to previous studies [15, 16], possibly due to greater access to convenience foods in higher income households. Surprisingly, FA showed no significant association with gender, although females reported higher FA symptoms compared to males consistent with the previous research [14, 15, 17, 29]. Specific lifestyle determinants of food addiction were identified to be BMI, dietary habits, sleep hours, physical activity, and mental health issues like anxiety and depression. The relationship between obesity and food addiction appears to be bidirectional, where our study highlights higher BMI as a significant risk factor for FA, consistent with previous literature [14, 16–21, 45], whereas other studies [27, 46–48] underscore the complex interrelationship between weight stigma, emotional eating, and food addiction

A non-vegetarian dietary preference also showed notable findings with FA, aligning with a study in Peruvian adults [45]. FA was significantly associated with sleep quality rather than duration, potentially due to poor sleep quality among food-addicted individuals [49]. Surprisingly, moderate to high physical activity was linked to FA, corroborating the findings from another study [50]. On the contrary, the MATEO study [13] reported lower FA scores with increased physical activity. This discrepancy may be attributed to 'Exercise anorexia nervosa' indicating excessive exercise to promote disordered eating [51]. Lastly, anxiety and depression were significantly associated with FA, consistent with a recent systematic review [52].

The study explored dietary determinants of FA, a previously unexplored area among Indian youth. Frequent consumption of unhealthy, energy-dense foods high in saturated fats, refined sugars, and processed ingredients increased the odds of FA, consistent with prior research [24]. These foods exhibit addictive-like potential due to 'hyper palatability' stimulating the brain's reward system [43]. In contrast, daily consumption of healthy foods did not promote FA, as supported by previous studies [14, 24].

The current study explored the magnitude of FA and its lifestyle determinants in Indian youth, making it unique, as it is, to our knowledge, the first study to have employed the YFAS 2.0 version scale on the Indian population. Further, this study has investigated the relationship between the frequency of consumption of specific foods and food addiction, offering insights into the dietary patterns and their subsequent connection with food addiction within the Indian population. From a policy standpoint, identifying foodstuffs that are consumed to satisfy the craving beyond its nutritional implications can empower the youth to make informed food choices. This further can help mitigate the risk of food addiction and eating disorders and can also play a pivotal role in addressing the root cause of several non-communicable diseases.

A few limitations of the present study merit attention. The study design was cross-sectional, which hinders generalizability. As participants were recruited by approaching through online platforms using convenience sampling, it may have introduced a selection bias favoring those with

internet accessibility. The self-reported anthropometric data could lead to potential biases, although instructions regarding measurements were briefly discussed with the participants. Food addiction itself is a debatable topic and lacks clearly defined diagnostic criteria. Although YFAS 2.0 has been extensively used globally to investigate the magnitude of food addiction, its use as diagnostic tool remains unclear. Therefore, the present study can be viewed as preliminary, and an extensive scientific inquiry is required in this domain concerning the Indian context. In addition, the cultural and dietary differences might have affected the reliability and validity of the YFAS 2.0. Future studies are recommended to focus on identifying specific Indian foods and other lifestyle factors that promote hedonic eating behaviors that will be beneficial. From a policy perspective, the regulations on the promotion and marketing of processed and ultra-processed foods known to promote addictive behavior shall be implemented by the government. Further, in the interest of public health, it is recommended to plan the targeted nutritional intervention and education studies with special emphasis on lifestyle determinants considering their potential to reduce food addiction risk.

Conclusion

The present study identified a rising magnitude of food addiction among Indian young adults. Although it is at the lower end of the spectrum compared to the Western population, the negative implications, such as eating disorders and non-communicable diseases, necessitate sensitization and planning strategic nutrition interventions with a specific emphasis on dietary determinants in the Indian context.

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Author contributions HV: conceptualization, data collection, and data analysis. DG: supervision, writing the original draft, data analysis, and reviewing the manuscript. AP: writing the original draft and data analysis. SJ: manuscript review. All the authors read and approved the final manuscript.

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Data availability The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate This study followed the Declaration of Helsinki Protocol and was approved (SIU/IEC/533) by the Independent Ethics Committee of Symbiosis International Deemed University. An electronic informed consent indicating voluntary participation was obtained from participants before data collection.

Competing interests The authors declare no competing interests.

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